

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

NEUROGRAFIX, NEUROGRAPHY)
INSTITUTE MEDICAL ASSOCIATES, INC.,)
IMAGE-BASED SURGICENTER)
CORPORATION, and AARON G. FILLER,)
Plaintiffs,)
vs.)
BRAINLAB, INC., BRAINLAB AG,)
BRAINLAB MEDIZINISCHE)
COMPUTERSYSTEME GMBH,)
Defendants.)

MEMORANDUM OPINION AND ORDER

MATTHEW F. KENNELLY, District Judge:

U.S. Patent No. 5,560,360 describes and claims methods of creating images of neural tissues and other bodily structures. The plaintiffs—NeuroGrafix, Neurography Institute Medical Associates, Inc., Image-Based Surgicenter Corporation, and Dr. Aaron Filler—have sued the defendants—Brainlab, Inc., Brainlab AG, and Brainlab Medizinische Computersysteme GmbH (collectively, Brainlab)—for infringement of the '360 patent. The plaintiffs have moved for summary judgment on the issue of direct infringement. For the reasons stated below, the Court denies the plaintiffs' motion.

Background

The Court assumes familiarity with this case's factual background and procedural history, which the judge overseeing its pretrial proceedings in a multidistrict litigation (MDL), the Federal Circuit, and this Court have described in written opinions. See, e.g.,

NeuroGrafix v. Brainlab, Inc., 787 F. App'x 710, 711–16 (Fed. Cir. 2019); *NeuroGrafix v. Brainlab, Inc.*, No. 12 C 6075, 2020 WL 489529, at *1 (N.D. Ill. Jan. 30, 2020); *In re NeuroGrafix ('360) Patent Litig.*, No. 13 MDL 2432-RGS, 2018 WL 2392000, at *1 (D. Mass. May 25, 2018), *rev'd sub nom. NeuroGrafix*, 787 F. App'x 710 at 719–20; *In re NeuroGrafix ('360) Patent Litig.*, 201 F. Supp. 3d 206, 209–12 (D. Mass. 2016).

The following facts are relevant for the purposes of the present decision.

Magnetic resonance imaging (MRI) technology can be used to create images of a person for medical purposes. At a very basic level, MRI technology involves exposing the body (or part of it) to magnetic and electromagnetic fields, which provokes a reaction in the atomic nuclei in the person's cells. MRI images are created by decoding that reaction.

The '360 patent describes methods and systems to generate detailed images of neural tissues and other bodily structures through an application of MRI technology called diffusion tensor imaging (DTI). Specifically, as relevant to this case, DTI can be used to create images of, among other things, white matter nerve tracts in the brain. The creation of these images is based on information about water diffusion. See *NeuroGrafix v. Brainlab, Inc.*, 787 F. App'x at 711–12 (describing DTI in detail). This is possible because water diffusion in white matter nerve tracts is anisotropic, meaning it diffuses more freely in one direction than in the other. By contrast, water diffusion in the tissues surrounding white matter nerve tracts—gray matter tissues—is isotropic; water moves relatively freely through them in all directions.

The method in the '360 patent exploits these differences. Specifically, it involves applying pulsed magnetic field gradients from an MRI scanner to "a region containing

nerve tissues for which a precise image is sought." *Id.* at 712. Anisotropic and isotropic tissues respond differently to the signals from these gradients. Under the method, these different responses are used to identify, depict, and visually differentiate between anisotropic and isotropic tissues—e.g., between white matter nerve tracts and the surrounding gray matter tissues.

Dr. Filler is a co-inventor of the methods described in the '360 patent. The other plaintiffs are corporations in the medical imaging field that allegedly have exclusive licenses to various aspects of the '360 patent's rights.

Brainlab sells a software product called FiberTracking to hospitals. Neuroradiologists can use FiberTracking to process data from MRI scans and, through DTI tractography, to create images of neural tracts in brains. The plaintiffs assert that users of FiberTracking directly infringed the '360 patent, and they allege that Brainlab engaged in and induced that direct infringement.

This case was consolidated for pretrial proceedings in an MDL proceeding along with cases filed against other defendants. While the case was before the MDL transferee judge, Brainlab moved for summary judgment on the issues of infringement and lost profits damages and to exclude the plaintiffs' expert opinions on damages. The MDL judge granted summary judgment on non-infringement in favor of Brainlab and terminated as moot Brainlab's motions for summary judgment on lost profits and to exclude the plaintiffs' expert opinions on damages. *In re Neurografix ('360) Patent Litig.*, 2018 WL 2392000, at *5. The court denied reconsideration and remanded the case to this Court, and this Court also denied reconsideration on the non-infringement question.

The plaintiffs appealed, and the Federal Circuit reversed the MDL court's grant of summary judgment on the non-infringement issue and remanded the case to this Court for further proceedings. See *NeuroGrafix*, 787 F. App'x at 719–20. In its opinion, the Federal Circuit also addressed the parties' "disputes about the proper construction" of the term "selected structure." *Id.* at 718–19.

On remand, the plaintiffs moved to reopen discovery to conduct additional discovery based on the Federal Circuit's revised claim construction. The Court granted that motion and reopened discovery "for a modest period . . . for the purpose of obtaining information needed for the parties to take into account and address the court of appeals' revision of the claim construction and to submit revised or supplemental expert reports based on that information." Dkt. no. 181 at 2.

Meanwhile, as a result of the Federal Circuit's reversal, Brainlab's motions for summary judgment on lost profit damages and to exclude the plaintiffs' expert opinions on damages were no longer moot. The Court permitted the parties to file supplemental briefs on the issue of lost profit damages, and it subsequently granted summary judgment on lost profit damages in favor of Brainlab and terminated as moot Brainlab's motion to exclude expert opinions. *NeuroGrafix*, 2020 WL 489529, at *6. The plaintiffs moved for reconsideration of that decision, and the Court denied that motion.

NeuroGrafix v. Brainlab, Inc., No. 12 C 6075, 2020 WL 919004, at *2 (N.D. Ill. Feb. 26, 2020). The plaintiffs then moved to certify the decision for interlocutory appeal under 28 U.S.C. § 1292(b). The Court denied that motion as well. *NeuroGrafix v. Brainlab, Inc.*, No. 12 C 6075, 2020 WL 1663105, at *4 (N.D. Ill. Apr. 4, 2020).

This case was set for trial on June 1, 2020. The trial date was continued due to

the ongoing global coronavirus pandemic, which caused this district to suspend all jury trials from mid-March through early August 2020.

From April through June 2020, the plaintiffs sought leave to file several motions, including the present motion for summary judgment on direct infringement. The Court denied several of those motions. *NeuroGrafix v. Brainlab, Inc.*, No. 12 C 6075, 2020 WL 3404748, at *5 (N.D. Ill. June 19, 2020) (denying leave to file a motion for sanctions in the form of a default judgment); *NeuroGrafix v. Brainlab, Inc.*, No. 12 C 6075, 2020 WL 3453551, at *3 (N.D. Ill. June 23, 2020) (denying leave to file a motion for summary judgment on damages for convoyed sales). The Court, however, gave the plaintiffs leave to file a motion for summary judgment on direct infringement, in part because that motion was "premised upon the claim construction adopted by the Federal Circuit" and involved "evidence obtained during the period of reopened discovery following the Federal Circuit's decision." Dkt. no. 341. The Court ordered briefing on that motion.

Meanwhile, the Court ruled on the parties' motions *in limine* and *Daubert* motions, and it indicated that further argument was needed on several points it identified in its order. *NeuroGrafix v. Brainlab, Inc.*, No. 12 C 6075, 2020 WL 3643057, at *1–11 (N.D. Ill. July 6, 2020). The Court initially set the hearing on those motions for July 29, 2020, but it vacated that date in light of the newly ordered briefing schedule on the plaintiffs' motion for summary judgment on direct infringement. See dkt. no. 341. The Court also issued an order granting a motion by the plaintiffs to strike a certain expert report submitted by the defendants. Dkt. no. 340.

In the present motion, the plaintiffs seek summary judgment that Brainlab directly infringed claims 36, 37, 39, 46, and 47 of the '360 patent. Of those claims, only claim

36 is an independent claim. That claim reads as follows:

36. A method of utilizing magnetic resonance to determine the shape and position of a structure, said method including the steps of:

- (a) exposing a region to a magnetic polarizing field including a predetermined arrangement of diffusion-weighted gradients, the region including a selected structure that exhibits diffusion anisotropy and other structures that do not exhibit diffusion anisotropy;
- (b) exposing the region to an electromagnetic excitation field;
- (c) for each of said diffusion-weighted gradients, sensing a resonant response of the region to the excitation field and the polarizing field including the diffusion-weighted gradient and producing an output indicative of the resonant response; and
- (d) vector processing said outputs to generate data representative of anisotropic diffusion exhibited by said selected structure in the region, regardless of the alignment of said diffusion-weighted gradients with respect to the orientation of said selected structure; and
- (e) processing said data representative of anisotropic diffusion to generate a data set describing the shape and position of said selected structure in the region, said data set distinguishing said selected structure from other structures in the region that do not exhibit diffusion anisotropy.

'360 patent, col. 42, line 43 - col. 43, line 2. Each of the other claims at issue is a dependent claim based on claim 36.

On September 9, 2020, the Court held a hearing via video on the plaintiffs' motion for summary judgment on direct infringement.

Discussion

A party is entitled to summary judgment only if it shows that there is no genuine dispute as to any material fact and it is entitled to judgment as a matter of law. Fed. R. Civ. P. 56. There is a genuine issue of material fact precluding summary judgment "if the evidence is such that a reasonable jury could return a verdict for the nonmoving party." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). In considering a

motion for summary judgment, the Court construes all facts and draws all reasonable inferences "in favor of the party against whom the motion under consideration was filed." *Richardson v. Chi. Transit Auth.*, 926 F.3d 881, 886 (7th Cir. 2019).

The Court starts by addressing disputes regarding the construction of claim 36 concerning the meaning of the term "selected structure" and whether so-called pulse-splitting is a limitation of the claim. The Court then addresses whether the plaintiffs are entitled to summary judgment of direct infringement of claim 36 and, finally, whether they are so entitled on claims 37, 39, 46, and 47.

A. Construction of claim 36

1. "Selected structure"

At the threshold, the parties dispute how to apply the Federal Circuit's construction of the claim term "selected structure." The Federal Circuit concluded that "to 'select[] [a] structure' is simply to choose it as a subject for placement into the claimed process that starts with exposing a region to a magnetic field, proceeds to sensing a resonant response, and continues as claimed." *NeuroGrafix*, 787 F. App'x at 718. That meaning, the court explained, "follows from the language of claim 36 itself." *Id.* The court also found that a selected structure's "location, orientation, axis, or the like" need not be "known in advance of the claimed mapping process to the same degree it will become known upon completion of that process." *Id.* at 719. And it indicated that the MDL court had correctly observed that "'delineating the pyramidal tract'" and "'ascertaining the precise location of the pyramidal tract' would satisfy the 'selected structure' limitation." *Id.* (alterations and internal citations omitted) (quoting *In re Neurograffix ('360) Patent Litig.*, 2018 WL 2392000, at *4, *4 n.5).

The Federal Circuit went on to reject Brainlab's contention that "software that tracks all fibers in an area cannot perform the method." *Id.* The court stated, "As long as a chosen structure is among those put into the process for distinguishing the data or images in the way the claim specifies, the claim is satisfied, even if the process used to do that results in comparable data and images for other structures as well." *Id.* The court also rejected a contention by the plaintiffs: "that 'selected structure' should be construed as equivalent to 'region' and that all uses of the FiberTracking software are therefore infringing because Brainlab's customers necessarily choose a region to be the subject of the claimed method before performing the steps of the method." *Id.*

An overview of the steps of claim 36 and how "selected structure" fits into them is instructive. As indicated, in step (a), "the claimed process starts with exposing a region to a magnetic field." *Id.* The parties agree that, for the purposes of this dispute, this essentially means exposing a patient's head to a magnetic field in an MRI scanner. The region—i.e., the head—includes "a selected structure . . . and other structures." '360 patent, col. 42, lines 48–50. The term "selected structure" appears again in step (d), which involves "vector processing" the region's response to magnetic and electromagnetic fields "to generate data" representing the "anisotropic diffusion" of the "selected structure," without regard to the alignment of the gradients to the "selected structure." *Id.*, col. 42, lines 59–63. And in step (e), that data is "process[ed] . . . to generate a data set describing the shape and position of [the] selected structure in the region," which "distinguish[es]" the "selected structure from other structures in the region." *Id.*, col. 42, line 64 - col. 43, line 2.

The parties do not dispute that, under the Federal Circuit's construction, step (a)

requires a person performing the method to select a structure before exposing a region to a magnetic field. Using a structure called the pyramidal tract as an example, the parties do not dispute that a person performing the method would need to select the pyramidal tract before exposing a patient's head to the magnetic field in an MRI machine. Rather, they dispute what it means to select a structure for placement into the claimed process.

The plaintiffs contend that to select a structure a person performing the method need only know or decide that the "selected structure" is the subject of the DTI process before exposing the region to the magnetic field. They contend that the person affirmatively acts to select the structure later in the process—at the hearing, the plaintiffs stated this occurs at step (e)—when he or she processes data about the selected structure's diffusion.

The defendants assert that simply knowing or deciding that a structure is the "selected structure" is insufficient to perform the method. They contend that a person performing the method must affirmatively act to choose the selected structure for DTI before exposing the region to the magnetic field. This action could include, for example, using a cursor in the software to choose the structure. (The defendants assert that it is not possible to do this in the FiberTracking software before commencing an MRI.)

The Court agrees with the plaintiffs' position. The Federal Circuit did not indicate that a user must take an affirmative action to select a structure before starting step (a) of the process. Rather, as indicated, the court stated that selecting a structure is "simply to choose it for placement into the claimed process." *NeuroGrafix*, 787 F. App'x at 718. And the court explained that the patent's specification "uses 'select' simply to

describe choosing something *before* taking some action," *id.* at 718 (emphasis added), which supports the view that one can select a structure before affirmatively taking some action. Nothing in the court's opinion indicates otherwise.

The language of the claim supports this conclusion. The preamble to the claim does not indicate that a selected structure must be affirmatively selected; it merely states that the claim concerns "[a] method . . . to determine the shape and positive of a structure" that includes the five steps that follow.¹ '360 patent, col. 42, lines 43–45. Step (a) does not suggest that a selected structure must be affirmatively selected either; the action described in step (a) involves "exposing a region" that "include[s] a selected structure," not physically doing something to select the structure. *Id.*, col. 42, lines 46–50.

Brainlab, however, contends that the plaintiffs do not have an expert "who can opine that an intention to choose is the same as a choice and relates to infringement in any way." Defs.' Resp. Mem. at 14. To the extent Brainlab is contending that expert testimony is necessary to determine the meaning of choosing or selecting a structure, that is incorrect. As just discussed, the Federal Circuit already resolved the meaning of "selected structure" based on the language in the patent, so no expert testimony is necessary on that point. And if Brainlab is suggesting that the plaintiffs' interpretation of "selected structure" does not relate to infringement, that makes no sense. Selecting a structure unquestionably relates to infringement because it is a limitation in three of the

¹ The parties assume that the preamble contains the "selected structure" limitation. As the Court explains later in this opinion, that assumption is questionable, but the Court will adopt it for purposes of this discussion because it does not affect the outcome of this decision.

steps at issue in claim 36. Indeed, elsewhere in its brief, Brainlab contends that selecting a structure is necessary for infringement of the patent.

2. Pulse-splitting

The parties also dispute whether something they refer to as "[s]plitting the phase-encoding gradient" or "splitting the image gradient pulse" is a limitation of claim 36.² See, e.g., Defs.' Resp. Mem. at 9. Following the parties' lead, the Court will refer to this as pulse-splitting. The parties agree that claim 36 does not contain any references to pulse-splitting. And they appear to agree the patent's specification describes pulse-splitting (though the word "split" appears only once in the patent). See '360 patent, col. 17, l. 62. But Brainlab contends that pulse-splitting is a limitation on claim 36, whereas the plaintiffs contend it is not. Neither the MDL court nor the Federal Circuit addressed this dispute in their opinions on the construction of claim 36.

The Court starts by giving a brief summary of what it understands pulse-splitting to mean. As indicated, the patented method involves applying "pulsed magnetic field gradients" to "a region containing the nerve tissues for which a precise image is sought." *NeuroGrafix*, 787 F. App'x at 712. At a basic level, the DTI image is created by processing the responses of different types of tissues to those gradients. But when the gradients interact with each other, they cause interferences called cross terms that diminish the "intensity" of a nerve's features in the image. See '360 patent, col. 17, lines 34–46. Splitting the gradient pulse apparently addresses that issue. It involves splitting

² The plaintiffs have asked the Court to strike a tutorial by one of Brainlab's experts, Michael Moseley, regarding pulse-splitting on the ground that the tutorial is argumentative and contains interpretations concerning infringement of the patent. The Court disregards the plaintiffs' request because it has not considered the tutorial in issuing this decision.

one of the gradients into two sections, which reduces the effects of the cross terms and enables the production of a higher quality image of the nerve. See *id.*, col. 17, line 59 - col 18, line 7.

The plaintiffs do not mention pulse-splitting in their motion for summary judgment. But they do discuss cross terms; they state that step (d) of claim 36 "requires suppression of cross terms," Pls.' Mem. at 19; and they describe "[t]he novel aspect[]" of the claimed process as "the application of diffusion gradients" to suppress "destructive cross terms," *id.* at 18.³ In response, Brainlab contends that the specification treats "pulse-splitting as an integral part of the claimed methods" and Dr. Filler previously has testified that it is a limitation of claim 36. Defs.' Resp. Mem. at 11. Brainlab also asserts that pulse-splitting is the only means disclosed in the patent for suppressing cross terms. *Id.* at 12. The plaintiffs reply that Brainlab is "misconstruing Dr. Filler's testimony" and that "it is impermissible for Brainlab to import an embodiment from the specification" as a limitation on the claim. Pls.' Reply Mem. at 21. At the same time, however, the plaintiffs contend that pulse-splitting is "the key innovative method that makes DTI possible." *Id.* at 22. Indeed, at the hearing on the present motion, Dr. Filler said that pulse-splitting is necessary to perform the patented method.

To the extent the plaintiffs suggest that it is never permissible for a court to read a limitation from a specification into a claim, that is incorrect. See, e.g., *Blackbird Tech*

³ In their discussion of step 36(a), the plaintiffs also state: "The Claim overall requires that the method describe the shape and position of the selected structure so there is a necessity for an accurate measurement This is where the requirement to suppress destructive cross terms is implicated." Pls.' Mem. at 14. It is not clear to the Court whether plaintiffs are saying that requirement is implicated at step 36(a) or that it is implicated later, "due to the need for an accurate measurement." *Id.* The Court need not, however, resolve that issue at this point.

LLC v. ELB Elecs., Inc., 895 F.3d 1374, 1377 n.2 (Fed. Cir. 2018) (the Federal Circuit has read limitations in a specification into a claim where "[t]here was specific language that made clear those limitations were important to the claimed invention"). In determining whether to read into a claim a limitation that is not plainly required by the claim's language, courts look to the specification and the prosecution history for an indication that the limitation "is important in any way that would merit reading it into" the claim. See, e.g., *id.* at 1377 (declining to read into a claim a limitation that was described in the specification where there was no evidence that the limitation was "important, essential, or critical to the invention"). Such an indication can be made through, for example, language referring to the limitation "as the present invention or an essential element," or "any other language that would cause the ordinarily skilled artisan to believe that [the limitation] is an important component of the invention or that it is critical to the invention for any reason." *Id.* (internal quotation marks omitted) (collecting cases).

Brainlab has not established that pulse-splitting is a limitation of claim 36. No language in the patent that makes clear that the pulse-splitting is "important, essential, or critical to the invention." See *id.* To be sure, Brainlab points to language that a problem—caused by rearranging the gradients to reduce cross terms—is "overcome" by splitting "the phase-encoding gradient." '360 Patent, col. 17, l. 52–65. But nothing in the patent indicates that gradient-splitting is essential or critical to the claimed method. To the contrary, a sentence at the beginning of the section of the specification where that language appears states that "the use of diffusion gradients" is part of the "preferred arrangement," which implies that it is *not* essential to the method. *Id.*, col. 17,

I. 22–24 (emphasis added).

Nor does Brainlab point to anything in the prosecution history that suggests otherwise. The prosecution history includes, among other things, the process of applying for a patent. See, e.g., *Phillips v. AWH Corp.*, 415 F.3d 1303, 1317 (Fed. Cir. 2005) ("The prosecution history . . . consists of the complete record of the proceedings before the [United States Patent and Trademark Office] and includes the prior art cited during the examination of the patent."). Brainlab does not mention the prosecution history at all in its brief. And if Brainlab is contending that the plaintiffs' past statements about pulse-splitting during the course of this litigation constitute the prosecution history, that is incorrect. See *id.*

Brainlab contends, however, that the plaintiffs' assertions during this litigation regarding the significance of pulse-splitting should be, in effect, considered binding and require the conclusion that pulse-splitting is a limitation of claim 36 and the other asserted claims. Specifically, Brainlab points to a statement the plaintiffs made in their motion to dismiss Brainlab's invalidity counterclaim and statements Dr. Filler made during his deposition and in his supplemental expert report on the issue of invalidity. If Brainlab is asserting that a party's prior statements about the interpretation of a claim for the purposes of invalidity have a bearing on the construction of that claim, Brainlab has forfeited that argument by failing to develop it, let alone cite any case law in support of it. See *Batson v. Live Nation Entm't, Inc.*, 746 F.3d 827, 833 (7th Cir. 2014) ("perfunctory and underdeveloped" arguments are forfeited). Indeed, the Court has not found any case law that would support that position. See, e.g., *Blackbird Tech*, 895 F.3d at 1377 ("The words of a claim are generally given their ordinary and customary

meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history."); *SanDisk Corp. v. Memorex Prod., Inc.*, 415 F.3d 1278, 1291 (Fed. Cir. 2005) (a party's arguments about the construction of a claim can evolve over the course of a case, particularly after discovery).

For these reasons, the Court concludes that pulse-splitting is not a limitation on claim 36. Accordingly, the Court disregards Brainlab's contention that the plaintiffs are not entitled to summary judgment on the ground that they have pointed to no evidence concerning pulse-splitting. That said, because the Court has accepted the plaintiffs' position that pulse-splitting is not a limitation of the claim, the plaintiffs will be estopped from taking a contrary position hereafter, because doing so would impose an unfair detriment on Brainlab. See *New Hampshire v. Maine*, 532 U.S. 742, 749–51 (2001) (explaining the doctrine of judicial estoppel).

B. Direct infringement of claim 36

The plaintiffs seek summary judgment on the issue of direct infringement under 35 U.S.C. § 271(a). Under that statute, "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent." 35 U.S.C. § 271(a). "Direct infringement under § 271(a) occurs where all steps of a claimed method are performed by or attributable to a single entity." *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 797 F.3d 1020, 1022 (Fed. Cir. 2015) (en banc) (per curiam). The Court addresses first direct infringement where the method is performed solely by a single entity and then direct infringement where the method is performed in part by a third party and attributed to a single entity.

1. Performance by a single entity

Though the plaintiffs do not contend that Brainlab performed every step of the claimed method itself, they cite to some cases that concern, at least in part, the performance of a method by a single entity. See *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1221 (Fed. Cir. 2014); *SiRF Tech., Inc. v. Int'l Trade Comm'n*, 601 F.3d 1319, 1329 (Fed. Cir. 2010); *Ricoh Co. v. Quanta Computer Inc.*, 550 F.3d 1325, 1335 (Fed. Cir. 2008). Accordingly, to clear up any confusion about the applicable governing law, the Court explains why cases involving the performance of a method by a single entity are distinguishable from this case.

The relevant aspects of the at-issue cases concern the direct infringement of method claims involving actions "which can be performed and are performed by a single party." See *SiRF*, 601 F.3d at 1329. In *SiRF*, for example, the Federal Circuit found that a party directly infringed a method patent where it sold devices and software that "dictate[d] the performance" of the at-issue claimed steps by automatically performing those steps. *Id.* at 1331 (affirming U.S. International Trade Commission's finding of direct infringement). Importantly, the relevant claims did not require the infringer's customers and/or the end users of its devices and software to take "any [] specified actions." *Id.* at 1329. Rather, the infringer performed the steps itself, or the devices and software did so automatically. *Id.* at 1329–30.

By contrast, the plaintiffs do not contend that Brainlab itself performs all of claim 36's non-automated steps or that the FiberTracking software performs the steps automatically. Rather, they expressly assert that *Brainlab's customers* perform "[e]ach and [e]very" non-automated step of the method. See Pls.' Mem. at 5. Therefore, *SiRF*

and other cases involving performance of a claimed method by a single entity have no bearing on the plaintiffs' entitlement to summary judgment against Brainlab.

To the extent that the plaintiffs contend that Brainlab's sale of the FiberTracking software in itself supports a theory of direct infringement, that misses the mark. The Federal Circuit has expressly clarified that its "decision in *SiRF* did not create direct infringement liability whenever an alleged infringer sells a product that is capable of executing the infringing method." *Ericsson*, 773 F.3d at 1221; *see also Ricoh*, 550 F.3d at 1335. And if third parties, such as an alleged infringer's customers, perform the steps of a claimed method, then the question is whether the third parties are under the alleged infringer's "direction or control," *Ericsson*, 773 F.3d at 1221; that is, whether the infringement can be attributed to the alleged infringer, which the Court discusses next. *See Akamai Techs.*, 797 F.3d at 1022.

2. Attribution to a single entity

"Where more than one actor is involved in practicing the steps," direct infringement occurs only if the acts of one actor are attributable to another "such that a single entity is responsible for the infringement." *Id.* "[A]n entity [is] responsible for others' performance of method steps in two sets of circumstances: (1) where that entity directs or controls others' performance, and (2) where the actors form a joint enterprise." *Id.*

The plaintiffs contend that Brainlab is responsible for the performance by FiberTracking users of the method in claim 36 because it directed or controlled that

performance.⁴ An entity can direct or control another's performance of a method by acting through an agent or contracting "with another to perform one or more steps of a claimed method." *Id.* at 1023. Recently, in *Akamai*, the Federal Circuit "broadened" the circumstances under which an entity can direct or control others' performance. *Travel Sentry, Inc. v. Tropp*, 877 F.3d 1370, 1381 (Fed. Cir. 2017) (alteration omitted). Under the principles articulated in *Akamai*, an entity also can direct or control others' performance of a claimed method where it: (1) "conditions participation in an activity or receipt of a benefit" upon others' performance of one or more steps of a patented method and (2) "establishes the manner or timing of that performance." *Akamai Techs.*, 797 F.3d at 1023. "Whether a single actor [has] directed or controlled the acts of one or more third parties is a question of fact." *Id.*

Though the plaintiffs contend that Brainlab directly infringed the '360 patent by directing and controlling its performance by others, neither party discusses *Akamai* or the Federal Circuit's subsequent case law interpreting and applying it. Indeed, in its response brief Brainlab does not discuss the governing law for direct infringement at all. See Defs.' Resp. Mem. at 16–21 (asserting that the plaintiffs cannot prove direct infringement—without citing to any case law on the issue). And, as the Court discusses momentarily, the plaintiffs refer to principles that the Federal Circuit expressly overruled in an earlier iteration of the *Akamai* case.⁵ Therefore, the Court takes a moment to

⁴ The plaintiffs do not assert that Brainlab formed a joint enterprise with other actors, so the Court does not consider that as a basis for the attribution of direct infringement to Brainlab.

⁵ *Akamai* "resulted in a number of decisions from [the Federal Circuit] and one from the Supreme Court examining," among other things, the scope of divided or joint infringement. *Travel Sentry*, 877 F.3d at 1374.

clear up some apparent confusion on at least the part of the plaintiffs about the proper standard at issue in this case.

The plaintiffs assert—correctly—that when multiple parties are involved in performing a patented method, one entity can be liable for other actors' performance of a patented claim if it directs or controls their performance. See *Akamai Techs.*, 797 F.3d at 1022. The plaintiffs also contend, however, that a party may be responsible for another's infringing acts where the party "was the 'mastermind' that 'controlled the conduct of the acting party.'" Pls.' Mem. at 8 (quoting *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373, 1381 (Fed. Cir. 2007), overruled by *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1318 (Fed. Cir. 2012), and citing *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1329 (Fed. Cir. 2008), overruled in relevant part by *Akamai Techs.*, 692 F.3d at 1318 (Fed. Cir. 2012)). The Federal Circuit has, however, expressly overruled *BMC* or *Muniauction* "to the extent [they] employed or implied a 'mastermind' theory of liability under § 271(a)."⁶ *Travel Sentry*, 877 F.3d at 1383; see also *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 692 F.3d 1301, 1318 (Fed. Cir. 2012), rev'd on other grounds, 572 U.S. 915 (2014). Rather, the current governing standard is the just-discussed one articulated in *Akamai*.⁷ See *Travel Sentry*,

⁶ Accordingly, the plaintiffs' reliance on two orders by magistrate judges employing the "mastermind" theory from *BMC* is misplaced. See *Adaptix, Inc. v. Apple, Inc.*, 78 F. Supp. 3d 952, 956 (N.D. Cal. 2015); *Zinus, Inc. v. Simmons Bedding Co.*, No. C 07-3012 PVT, 2008 WL 682858, at *2–3 (N.D. Cal. Mar. 11, 2008).

⁷ To be sure, the plaintiffs cite one case that applies the proper standard from *Akamai*. But rather than recognizing that the case employs a newer standard, they describe that case as "further clarify[ing]" their reasoning on direct infringement. See Pls.' Mem. at 9–10 (citing *Eli Lilly & Co. v. Teva Parenteral Medicines, Inc.*, 845 F.3d 1357, 1367 (Fed. Cir. 2017)). In short, they do not grapple with the two-part test from *Akamai*.

877 F.3d at 1377–78.

The plaintiffs also assert that a party that makes a device can be liable for infringement if it "perform[s] or control[s] at least one step of the claim." Pls.' Mem. at 7. If the plaintiffs are suggesting that an alleged infringer need only perform or control one step of a claim to be a direct infringer, that is incorrect. As indicated, the Federal Circuit has made clear that, for direct infringement, "all steps of a claimed method" must be "performed by or attributable to a single entity." *Akamai Techs.*, 797 F.3d at 1022.

Further, to the extent the plaintiffs contend that a party can infringe a patent by performing some of the steps of the patent and instructing a third party on how to perform the other steps, the Court understands that form of direction and control to fall within the *Akamai* framework. See *Eli Lilly & Co. v. Teva Parenteral Medicines, Inc.*, 845 F.3d 1357, 1366 (Fed. Cir. 2017) (discussing an entity's provision of guidance or instructions on performing a method as evidence that could support a finding that the first *Akamai* requirement was satisfied); *Akamai Techs.*, 797 F.3d at 1024 (instructions from the alleged infringer to its customers, which customers needed to follow in order to access the defendant's service, supported the finding that the defendant "establishe[d] the manner and timing of its customers' performance"—the second *Akamai* requirement—"so that customers [could] only avail themselves of the service upon their performance of the method steps"). Whether such instruction or guidance fits into the first or second requirement of the *Akamai* framework appears to depend on the context, so the Court will address it in its discussion of both requirements. See *id.* at 1023 ("[P]rinciples of attribution are to be considered in the context of the particular facts presented.").

In sum, to show that they are entitled to summary judgment on direct infringement of claim 36, the plaintiffs must show that there is no genuine factual dispute regarding whether all steps of the claim were performed and whether Brainlab directed or controlled any performance of steps by any FiberTracking users. See *id.* at 1022; see also *Lyda v. CBS Corp.*, 838 F.3d 1331, 1339 (Fed. Cir. 2016) (listing the requirement that "all steps of the claimed method are performed" as one of the limitations of a claim of joint infringement, i.e. direct infringement by attribution). The Court explains next why the plaintiffs have not made such a showing.

a. Performance of all steps of the claim

Though the parties do not expressly discuss the requirements from *Akamai*, they do address the threshold question of whether all steps of claim 36 are performed either automatically, by Brainlab, or by FiberTracking users. The parties do not dispute that FiberTracking automatically performs steps (b) and (c) of claim 36.⁸ They dispute, however, whether a reasonable jury could conclude that any FiberTracking users performed each of the other steps. The Court addresses each disputed step in turn.

i. Preamble

The plaintiffs contend that FiberTracking users have performed any limitations that are provided in claim 36's preamble. As indicated, the preamble states: "A method of utilizing magnetic resonance to determine the shape and position of a structure, said method including the steps . . ." '360 patent, col. 42, lines 43–45.

The parties assume, without any discussion, that the preamble is limiting. That is

⁸ Accordingly, the Court disregards the plaintiffs' arguments regarding the performance of those steps.

a questionable assumption. See *Bio-Rad Labs., Inc. v. 10X Genomics Inc.*, 967 F.3d 1353, 1369 (Fed. Cir. 2020) ("If [a] claim uses the preamble only to state a purpose or intended use for the invention, then the preamble is not limiting."); see also *NeuroGrafix*, 787 F. App'x at 718 (construing the meaning of "selected structure" with reference to steps (a), (d), and (e) of claim 36, not its preamble). The Court need not, however, decide at this point whether the preamble is limiting because neither party has raised the issue, and it does not affect the outcome of this decision. This is because the parties assume that the limitation in the preamble is the same as the "selected structure" limitation in steps (a), (d), and (e) of claim 36; they do not suggest that the preamble imposes any additional limitations on the claim.

The plaintiffs contend that FiberTracking users selected a structure before conducting MRI scans. As an initial matter, Brainlab contends that the plaintiffs cannot contend take that position because, it says, the plaintiffs previously argued that FiberTracking users selected a structure only after completing steps like MRI imaging. Brainlab is correct that a party that has assumed a position in a legal proceeding cannot later assume a contrary position, especially if it would prejudice the opposing party. *New Hampshire*, 532 U.S. at 749. This rule, however, is based on the doctrine of judicial estoppel, and it requires that a court accepted the party's earlier position, such that acceptance of the party's new position would lead to inconsistent determinations. *Id.* at 750. That is not the case here. To the extent the plaintiffs previously asserted that FiberTracking users selected a structure after completing the MRI imaging, no court previously has accepted that position, so the plaintiffs are not precluded from taking a contrary position now.

On to the parties' arguments regarding the "selected structure" limitation. In support of their contention that FiberTracking users performed that limitation, the plaintiffs point to testimony by a neuroradiologist, Dr. Andrei Holodny. Dr. Holodny testified that, before conducting a functional MRI, he or someone in his lab decides which areas of the brain to study. And, he testified, they often use a functional MRI and their knowledge of anatomy to determine the location of the white matter tracts they seek to represent before they create a DTI image. A jury reasonably could take that to mean that Dr. Holodny or a member of his lab cognitively selects a structure before starting the MRI scan, which the Court explained earlier in this opinion is necessary under the "selected structure" limitation. But Dr. Holodny also testified that he had used Brainlab's software approximately ten times "years ago" and was "not familiar" with it. Pls.' Ex. C (dkt. no. 329-1) at 42:1–12, 43:11–23. Accordingly, a reasonable jury could conclude that Dr. Holodny's testimony does not indicate whether a *FiberTracking* user selected a structure before starting an MRI scan. Thus there remains a genuine factual dispute regarding whether a FiberTracking user has done so.

The plaintiffs contend that testimony by Dr. Filler (who, in addition to being a plaintiff, serves as an expert in this case) shows that software used by neuroradiologists at the hospital where Dr. Holodny works functions in a similar way to FiberTracking. From this, the plaintiffs appear to suggest, a jury could infer that Dr. Holodny's testimony about how he selects a structure also describes how a neuroradiologist has selected a structure in the FiberTracking software.⁹ Dr. Filler reviewed data from an MRI scan that

⁹ The plaintiffs raise this contention with regard to steps (a), (b), and (c) of claim 36, but the Court addresses it here because it seems to go, at least in part, to the question of

was completed using a different software program at the hospital where Dr. Holodny works. The plaintiffs contend that Dr. Filler's testimony shows that the hospital's MRI scanners perform "the automated aspects of Claim step[s] 36(a), 36(b) and 36(c)." Pls.' Mem. at 17–18. Assuming this is true, a reasonable jury could conclude that those MRI scanners are used to perform at least the automated steps of the claim. But a reasonable jury also could conclude that the FiberTracking software is not necessarily used in the exact same way to perform every step of the claim. Indeed, Dr. Holodny testified that he preferred other programs over FiberTracking, which suggests that there are differences between the programs he uses and FiberTracking. And even if a reasonable jury did conclude that the FiberTracking software can be used in an infringing way, that shows, at most, that the software is capable of an infringing use. Without more, that is not enough for a reasonable jury to find that a user of FiberTracking has actually "selected a structure" or performed other steps of claim 36. See, e.g., *Fujitsu Ltd. v. Netgear Inc.*, 620 F.3d 1321, 1329 (Fed. Cir. 2010) ("Unless the claim language only requires the capacity to perform a particular claim element . . . , it is not enough to simply show that a product is capable of infringement; the patent owner must show evidence of specific instances of direct infringement.").

The plaintiffs next contend that instructions in Brainlab's manual for the FiberTracking software establish that users of the software have performed the "selected structure" limitation. They point to a part of the manual that says that "to create fiber structures in [a] treatment plan," a FiberTracking user "must first define the

whether Dr. Holodny's testimony shows infringement by a user of the FiberTracking software.

initial region of interest in the selected image set." Pls.' L.R. 56.1 Stat. ¶ 9 (emphasis omitted). But the part of the manual to which they cite provides instructions for tracking fiber structures after a user has obtained a DTI data set and uploaded it to the software program—that is, after a user has already performed an MRI and processed data from it. Thus the section of the manual to which the plaintiffs cite does not appear to provide instructions for selecting a structure *before* conducting an MRI scan, let alone indicate that a FiberTracking user must cognitively select a structure before conducting such a scan, as the Court has explained is required by the "selected structure" limitation. Accordingly, the cited language in the manual is not enough to demonstrate the absence of a genuine factual dispute regarding whether a FiberTracking user has selected a structure before conducting an MRI scan. See *Fujitsu*, 620 F.3d at 1329.

That said, the plaintiffs assert that Brainlab has provided "consultants and technicians" to "train and/or instruct Brainlab's customers" on how to use Brainlab's products based on the instruction manual. Pls.' Mem. at 9. Evidence that an alleged infringer conducted demonstrations of a method can constitute evidence of "specific instances of direct infringement." See *Fujitsu*, 620 F.3d at 1329. But the plaintiffs forfeited their arguments about Brainlab's training and/or instructional sessions by developing those arguments for the first time in their reply brief. See *Campos v. Cook County*, 932 F.3d 972, 976 n.2 (7th Cir. 2019).¹⁰ In their opening brief, the plaintiffs asserted that Brainlab's Rule 30(b)(6) corporate representative Sean Clark testified

¹⁰ In patent cases, courts apply "procedural rules following the rule of regional circuit, unless the issue is unique to patent law." *Odyssey Logistics & Tech. Corp. v. Iancu*, 959 F.3d 1104, 1108 (Fed. Cir. 2020) (internal quotation marks omitted).

about Brainlab's training practices, but the relevant transcript was not available when they filed their motion. Brainlab did not respond to this contention. The plaintiffs submitted the transcript with their reply brief.¹¹ But that was too late; by then Brainlab had no opportunity to respond to it. It was incumbent on the plaintiffs to submit the relevant evidence with their motion for summary judgment, and they did not do so.

Regardless, even if the plaintiffs had properly submitted the transcript of Clark's testimony, a reasonable jury would not be required to conclude from it that FiberTracking users have performed the "selected structure" limitation. This is because, though Clark testified Brainlab's consultants have provided demonstrations of and training on its software to its customers, he did not testify that those consultants have trained customers on how to perform the "selected structure" limitation or any of the specific steps of claim 36. And the plaintiffs have presented no evidence that the only way to use FiberTracking is by performing every step of claim 36, so a reasonable jury could conclude that the consultants demonstrated only non-infringing uses of FiberTracking. See *Fujitsu*, 620 F.3d at 1329 (no genuine factual dispute regarding direct infringement where expert testimony and instructions for a product showed that it was capable of infringement but not that it was actually used in an infringing manner). Thus, viewing the in the light most favorable to Brainlab, the plaintiffs have not shown the absence of a genuine dispute regarding whether Brainlab trained its customers on how to user FiberTracking to select a structure or otherwise perform the steps of claim

¹¹ After the plaintiffs submitted the transcript of Clark's deposition, Brainlab moved for sanctions on the ground that the plaintiffs violated a protective order relating to information discussed during the deposition. The Court will address that motion for sanctions in a separate order at a later time.

36.

The plaintiffs also mention a video posted on Brainlab's YouTube channel as evidence that a FiberTracking user performed the claim's steps, including the selected structure limitation. See Pls.' Mem. at 9, 13. In the video, a person who is identified as a neurosurgeon in China says that he uses Brainlab's software to depict parts of the brain before performing brain surgery. But he does not describe in detail the actions he takes to use the software. The plaintiffs assert that the "customers" in the video "state that they use FiberTracking to depict the 'functional cortex.'" See *id.* at 13. A reasonable jury certainly could conclude that that the video shows that FiberTracking has been used to create images of brains. But a reasonable jury could just as well conclude that the video does not show that any FiberTracking users have selected a structure or performed every step of claim 36, because the video does not discuss in detail the process for creating the images. In short, the video does not establish the absence of a genuine factual dispute either.

In their statement of facts under Local Rule 56.1, the plaintiffs list other evidence in connection with claim 36's preamble: testimony by a neuroradiologist named Dr. Robert Young, testimony by an expert for Brainlab named Dr. James Leach, an image and its caption in an article, and a survey of neuroradiologists conducted by an expert for the plaintiffs.¹² In their brief, however, they do not mention this evidence with regard

¹² In their list of "evidence of the predicate mental selection" limitation of claim 36 plaintiffs also mention testimony by and a video of a neurosurgeon, Dr. David Baskin. See Pls.' Mem. at 4. They do not, however, provide a citation to that video and/or testimony, explain how what it shows about the selected structure limitation, or mention it in their statement of facts, so the Court disregards it. In addition, the plaintiffs argue that a video by an alleged customer of Brainlab, Dr. Michael Hoch, shows how Brainlab users select a structure (and apparently perform other steps of claim 36). The Court

to the claim's preamble, let alone explain how it shows infringement of the "selected structure" limitation or any other limitation. Specifically, in another section of their brief, they note that Dr. Young wrote an imaging protocol that Dr. Filler reviewed in his capacity as an expert, but they do not assert that Dr. Young testified about direct infringement or explain how, if at all, his testimony shows that any FiberTracking users have completed any of the claim's steps. See Pls.' Mem. at 4 (listing, without explanation, "testimony and publications" of Dr. Young as "evidence of the predicate mental selection"), 17 (mentioning an "imaging protocol written by" Dr. Young). Elsewhere in their brief, the plaintiffs state that the image and its caption—which appear in an article for which Drs. Holodny and Young are listed as authors—"provides incontrovertible proof of each and every step of Claims 36, 39, 46, and 47 being performed by a Brainlab customer," but they do not explain how it provides such proof. See *id.* at 10 (emphasis omitted); see also *id.* at 25. The plaintiffs also address the admissibility of Dr. Leach's testimony without describing its substance or how it supports a finding of direct infringement. See *id.* at 11. And they mention the survey just once—in the list of evidence they contend shows "evidence of the predicate mental selection"—without explaining how it supports their arguments. See *id.* at 4.

Because the plaintiffs have not explained how this evidence supports a finding that any FiberTracking user selected a structure or performed other steps of claim 36, they have forfeited for purposes of summary judgment arguments that a user has done so. See *Batson*, 746 F.3d at 833 ("perfunctory and underdeveloped" arguments are

does not consider the plaintiffs' arguments about this video because the plaintiffs raised them solely in their reply brief. See *Campos*, 932 F.3d at 976 n.2.

forfeited); *Estate of Moreland v. Dieter*, 395 F.3d 747, 759 (7th Cir. 2005) (stating, where a party "failed to discuss the facts relevant to their claim" and "rel[ied] instead almost entirely on a series of string citations to affidavits and other documents in the record," that a court "will not scour a record to locate evidence supporting [the] party's legal argument").

Regardless, this evidence also does not establish the absence of a genuine factual dispute regarding whether a FiberTracking user has selected a structure or otherwise completed the steps of claim 36. For one, Dr. Young testified that he does not use Brainlab's software often; he does not "personally" conduct much of the image processing for DTIs; and he did not "know for sure" whether FiberTracking ever has been used to generate a tractogram depicting an area of interest. See Pls.' Ex. D (dkt. no. 329-1) at 30:21–23, 31:1–10, 34:16–35:6. Thus, as with Dr. Holodny's testimony, even if a jury found that Dr. Young testified that he has performed the claim's steps, a reasonable jury could conclude that his testimony does not pertain to FiberTracking or show that FiberTracking has been used in an infringing way.

The same is true with Dr. Leach's testimony. The plaintiffs point to testimony by Dr. Leach discussing different processes used to identify white matter tracts and reflecting that Dr. Leach commonly has a prior brain image available to him when he is planning a functional MRI or DTI. But they do not point to testimony by Dr. Leach that he has selected a structure before conducting an MRI scan *when using the FiberTracking software*. Without more, a reasonable jury could conclude from his testimony that no FiberTracking user has done so.

With regard to the image in the article by Drs. Young and Holodny, Dr. Young

testified that it was "a pretty image made for a journal" that was not representative of "our standard of care." See Defs.' Resp. to Pls.' L.R. 56.1 Stat. ¶ 7. A reasonable jury could interpret this to mean that the image does not represent Dr. Young and/or Dr. Holodny's actual practice for conducting DTIs. Accordingly, a reasonable jury could conclude that, even if the image represents the completion of the selected structure limitation or other steps of claim 36, it does not show that Dr. Young and/or Dr. Holodny actually performed those steps using the FiberTracking software and thus is not evidence of a specific instance of infringement.

With regard to the survey, the plaintiffs have not demonstrated its admissibility. Brainlab has moved to exclude the plaintiffs' expert report on the survey, and the Court indicated that it needs to hear further argument on that motion. *NeuroGrafix*, 2020 WL 3643057, at *2. At the time, the plaintiffs asserted that they were using the survey's results to prove damages, not infringement. Pls.' Resp. in Opp. to Defs.' Mots. *in Limine* at 12. They now assert that the survey reflects that certain neuroradiologists using Brainlab's tractography software "specified [that] before" performing an MRI scan "the specific neural tract to be depicted by a tractography," i.e., they seek to use it to prove infringement. Pls.' L.R. 56.1 Stat. ¶ 12 (quoting expert report). The Court notes that Brainlab has raised questions about, among other things, the survey's reliability that would affect the weight a jury might assign to it if it is admitted. Thus even assuming the survey is admissible, a reasonable jury could assign it minimal weight and find that, when considered with the other evidence in the record, it does not show that any FiberTracking users selected a structure or otherwise performed the steps of claim 36.

For these reasons, there is a genuine factual dispute regarding whether any

FiberTracking users have performed the "selected structure" limitation that the parties allege is imposed by claim 36's preamble.

ii. Step (a)

Next, the plaintiffs contend that FiberTracking users have performed step (a) of claim 36, which, as indicated, involves "exposing a region" that includes "a selected structure" and "other structures" to a magnetic polarizing field. '360 patent, col. 42, lines 46–50. The parties' dispute about this step concerns the "selected structure" limitation. As the Court explained earlier, this term means a person must choose a structure before conducting an MRI scan but need not take any affirmative steps to do so.

The plaintiffs contend that there is no genuine factual dispute regarding whether a FiberTracking user has selected a structure before conducting an MRI scan. In their brief, they cite two pieces of evidence to support that contention —Dr. Holodny's testimony and an expert report by Dr. Filler—but they do not explain how that evidence shows that any FiberTracking users have performed step (a). See Pls.' Mem. at 15. This argument is too perfunctory to be considered for summary judgment purposes. See *Batson*, 746 F.3d at 833; *Estate of Moreland*, 395 F.3d at 759.

Regardless, a reasonable jury could conclude that Dr. Holodny's testimony does not indicate whether FiberTracking users have selected a structure before conducting an MRI because, as discussed, Dr. Holodny said he was not familiar with the FiberTracking software. And the cited testimony by Dr. Filler concerns how an MRI machine works, not how FiberTracking works. A reasonable jury could conclude that it does not show specific instances of FiberTracking users selecting a structure either.

A reasonable jury could draw the same conclusion from other evidence that

might relate to step (a). Specifically, testimony by Dr. Young—which the plaintiffs cite in relation to step (a) in their statement of facts but not in their brief—reflects that a person creating a DTI image exposes a region to a magnetic field, including white and gray matter structures. Dr. Young's testimony does not reflect that the person performing the method selects a structure before exposing the region to the magnetic field, let alone that a user of the FiberTracking software has done that, so a reasonable jury could conclude that it does not show that FiberTracking users have performed step (a). And to the extent the plaintiffs contend that the evidence they cited with regard to the claim's preamble shows that FiberTracking users have selected a structure in step (a), there is a genuine factual dispute regarding that evidence, as the Court previously explained.

For these reasons, the plaintiffs have not shown the absence of a genuine factual dispute regarding whether any FiberTracking users have performed step (a) of claim 36. Accordingly, they have not shown that they are entitled to summary judgment on the issue of direct infringement. The Court nonetheless discusses the other steps of the claim in order to address the scope of disputed issues for trial.

iii. Step (d)

The plaintiffs contend that FiberTracking users have performed step (d) of claim 36, which requires, among other things, "vector processing [] outputs to generate data representative of anisotropic diffusion exhibited by said selected structure in the region, regardless of the alignment of [] diffusion-weighted gradients with respect to the orientation of [the] selected structure." '360 patent, col. 42, lines 59–63. This part of the plaintiffs' brief is difficult to parse. It largely consists of an explanation of how this step is performed. As the Court understands it, the plaintiffs contend that the step entails the

use of two types of analysis (vector and tensor analysis) to process the outputs from step (d); the data generated from that processing "characterizes the selected structure"; and cross terms are suppressed "uniformly" to make "each voxel" appear "the same." Pls.' Mem. at 18–19. (A voxel is a data point on a three-dimensional image, comparable to a pixel on a two-dimensional image.) After providing this explanation, the plaintiffs cite to the testimony by Dr. Holodny and a report by an expert named David Laidlaw. But they do not explain that testimony at all, let alone explain how it shows that FiberTracking users have performed step (e). See *id.* at 19. This argument is also too perfunctory to be considered for summary judgment purposes. See *Batson*, 746 F.3d at 833; *Estate of Moreland*, 395 F.3d at 759.

Indeed, because the plaintiffs reference the evidence only in their discussion of the second clause of the claim, it is not clear to the Court whether they contend the evidence pertains to the entirety of step 36(d) or just the second part of it. See Pls.' Mem. at 18–19. Brainlab appears to view the evidence as relating to the second clause of the claim; it contends that the plaintiffs have not offered proof of "vector processing," which the plaintiffs discuss solely with regard to the first clause. See Defs.' Mem. at 19; Pls.' Mem. at 18. In their reply brief, the plaintiffs do not provide any further explanation. They merely say that Laidlaw's testimony concerning the performance of step (d) "is clear and stated in detail" and that Dr. Holodny "testified with equal clarity." Pls.' Reply Mem. at 22.

Regardless, assuming that the plaintiffs put forth the evidence to support both parts of the claim, a reasonable jury could conclude that it does not establish specific instances of FiberTracking users performing step (d). As indicated, even if Dr.

Holodny's testimony indicates that he performs step (d) of the claim (an issue the Court need not decide), a reasonable jury could conclude that it does not show that a FiberTracking user has done so. And a reasonable jury could conclude that Laidlaw's expert report does not show that a FiberTracking user has performed all of step (d). In his expert report, Laidlaw states that two steps in which the FiberTracking software "perform[s] vector and tensor calculations at each voxel" and "calculate[s] . . . derived values characterizing that second-order tensor . . . implement step (d) of the patent." Pls.' L.R. 56.1 Stat. ¶ 22. In short, he provides a technical description of how the software works. Without more context or explanation about what this description means in lay-person's terms, a reasonable jury would not be required to interpret it as meaning that a FiberTracking user has performed each part of step (d).¹³

iv. Step (e)

The plaintiffs next contend they have established infringement of step (e) of claim 36, which requires "processing" the data from step (d) "to generate a data set describing the shape and position of said selected structure in the region" that "distinguish[es] [] selected structure from other structures in the region that do not exhibit diffusion anisotropy." '360 patent, col. 42, line 64 - col. 43, line 2. This part of the plaintiffs' brief is also difficult to parse. It focuses on describing how this step is performed. The

¹³ For the reasons previously stated, the Court need not address Brainlab's contention that there is a genuine factual dispute regarding whether the FiberTracking software uses split pulses in step (d) to reduce cross terms.

plaintiffs appear to contend that the step involves collecting voxel measurements into a "higher order" data set that "describe[s] the selected structure." Pls.' Mem. at 19–20.¹⁴

To support their contention that FiberTracking users have performed this step, the plaintiffs point to a section in Brainlab's manual for FiberTracking that says that "[w]hen fiber tracking is complete, you can create a three-dimensional model of the fiber bundle to export for use with the Brainlab navigation software" and provides the pyramidal tract as "an example" of "a 3D fiber object." Pls.' Resp. to Defs.' Mot. for Attorney's Fees, Ex. K to Ex. 1(A) (dkt. no. 116-2) at BL008627–008682.¹⁵ The plaintiffs also refer to an explanation they contend Brainlab has given about how data of fiber tracts allow for the visualization of white matter tracts, which appears in an "announcement" about FiberTracking. See Defs.' Resp. to Pls.' Mot. for Certificate of Appealability of the Court's Jan. 30, 2020 Summ. J. Order, Ex A. (dkt. no. 240-1) ¶ 59. That "announcement" comes from a proposed amended complaint the plaintiffs filed before the MDL court.¹⁶ See *id.* In addition, the plaintiffs refer to a software package

¹⁴ The plaintiffs also assert that the Federal Circuit "provided a new claim construction for the term 'region.'" *Id.* at 20. That is incorrect; the Federal Circuit constructed the term "selected structure," not "region" (though it explained the relationship between the two terms). See *NeuroGrafix*, 787 F. App'x at 718–19. Regardless, the parties do not appear to dispute that the relevant "region" at issue in this case is the part of the body exposed to the MRI machine, e.g., the head.

¹⁵ As indicated, for this part of the manual, the plaintiffs cited to a brief they filed in response to an earlier motion, rather than submitting the manual in connection with the present summary judgment motion. (This is also true for some of the other evidence the plaintiffs cite.) The Court nonetheless discusses this part of the manual.

¹⁶ The plaintiffs have not submitted this proposed amended complaint in connection with their motion for summary judgment but instead cite to a docket entry where Brainlab submitted the proposed amended complaint as an exhibit to its response objecting to the plaintiffs' motion to certify an interlocutory appeal.

Brainlab sells called BrainSuite, which they appear to contend is the same as or similar to FiberTracking, and they cite (with no pincites) to sixty pages of exhibits relating to BrainSuite. See Pls.' Exs. P, Q, and R (dkt. no. 344). These exhibits consist of a summary of BrainSuite's components from Brainlab's website, see Pls.' Ex. P; a copy of an online brochure from Brainlab regarding a product called Microscope Navigation, see Pls.' Ex. Q¹⁷; and a manual by Brainlab about that product, see Pls.' Ex. R.

Once again, the plaintiffs have not explained how any of this evidence shows direct infringement, so they have forfeited for summary judgment purposes their arguments on step (e). See *Batson*, 746 F.3d at 833; *Estate of Moreland*, 395 F.3d at 759.

Even if the plaintiffs had developed this argument, the evidence they cite does not show the absence of a genuine factual dispute. For the reasons explained earlier, the plaintiffs have not shown that Brainlab's manual establishes any specific instances of FiberTracking users actually performing the claim's steps. See, *Fujitsu*, 620 F.3d at 1329. Assuming the "announcement" about FiberTracking is admissible, it does not show that a person using the software completes step (e) of claim 36 but only that the user can create images of white matter tracts. And the FiberTracking software is not mentioned by name in any of the sixty pages of exhibits relating to BrainSuite, and the plaintiffs have not put forth admissible evidence that BrainSuite includes or is the same as FiberTracking. More to the point, the exhibits do not appear to show any specific

¹⁷ Dr. Filler's declaration authenticating these exhibits incorrectly states that Ex. P contains the online brochure and that Ex. Q contains the summary of Brainsuite's components.

instance of a FiberTracking user performing step (e). Therefore, a reasonable jury could find that this evidence does not show a specific instance of a FiberTracking user performing step (e) of claim 36.

In sum, for the above-stated reasons, the plaintiffs have not shown that all steps of the claim were performed by Brainlab and/or FiberTracking users. Therefore, they have not shown that they are entitled to summary judgment.

b. Direction or control

Even though the plaintiffs have not shown their entitlement to summary judgment, the Court addresses whether they have shown that Brainlab directed or controlled any performance of steps by FiberTracking users, in order to discuss the scope of issues for trial. As indicated, an entity can direct or control others' performance of a claimed method where it: (1) "conditions participation in an activity or receipt of a benefit" upon others' performance of one or more steps of a patented method and (2) "establishes the manner or timing of that performance." *Akamai Techs.*, 797 F.3d at 1023. The Federal Circuit has described cases in which there was evidence of such direction and control as having "a common thread" consisting of "evidence that a third party hoping to obtain access to certain benefits can only do so if it performs certain steps identified by the defendant, and does so under the terms prescribed by the defendant." *Travel Sentry*, 877 F.3d at 1380.

Though the plaintiffs do not expressly address the requirements from *Akamai*, they contend that Brainlab has exerted direction and control by providing a manual on how to use FiberTracking to perform claim 36's steps and using consultants and/or technicians to train or instruct FiberTracking users on how to do so. Accordingly, the

Court addresses whether there is a genuine factual dispute regarding whether that constitutes direction or control under the test articulated in *Akamai*.

i. Conditioning

In considering the first requirement from *Akamai*, the Court first must identify the relevant "activity" or "benefit" at issue. See *Travel Sentry*, 877 F.3d at 1380. The activity or benefit often involves the relationship between the patent at issue and the service provided by the defendant. For example, the patent in *Akamai* "claim[ed] methods for delivering content over the Internet," and the relevant activity or benefit at issue was the use of the defendant's Internet content delivery network by its customers. See *Akamai Techs.*, 797 F.3d at 1024. In *Eli Lilly*, where the patent concerned methods of administering a chemotherapy drug after pretreatment with two common vitamins, the relevant benefit was treatment with the chemotherapy drug. *Eli Lilly*, 845 F.3d at 1361, 1365. Similarly, in this case, the relevant activity is connected to the subject of the '360 patent and the service provided by the defendant: the use of the FiberTracking software to create DTI images of neural tissues and other bodily structures.

Next, the Court must determine whether Brainlab "conditions" the use of its FiberTracking software to create DTI images on the performance of at least one step of the method in claim 36 of the '360 patent. See *Travel Sentry*, 877 F.3d at 1382–83. Courts have recognized several ways by which a party can condition participation in an activity or receipt of a benefit upon others' performance of at least one step of a patented method. See *id.* One such way is by providing guidance or instructions on how to perform the patented method and conditioning participation in the activity or access to the benefit on such performance. See *Eli Lilly*, 845 F.3d at 1366.

In *Eli Lilly*, for example, the Federal Circuit upheld a district court's finding after a bench trial that physicians conditioned the relevant benefit—treatment with a chemotherapy drug—on the administration of a certain vitamin that patients gave to themselves. *Id.* at 1366–67. The Federal Circuit based this conclusion on the facts that prescribing instructions directed to the physicians stated that taking the vitamin was a prerequisite to taking the drug; the drug's labels repeatedly stated that physicians should instruct patients to take the vitamin; physicians could withhold the drug from patients who did not take the vitamin; and the parties' experts did not genuinely dispute that it was "standard practice" for the physicians to withhold the drug from such patients. *Id.* at 1366. Notably, the court acknowledged the defendants' argument "that mere guidance or instruction is insufficient to show 'conditioning.'" *Id.* But it stated that evidence concerning both "the critical nature" of the vitamin and "physicians' practices support a finding that physicians cross the line from merely guiding or instructing patients" to take the vitamin "to conditioning" their treatment with the chemotherapy drug on the administration of the vitamin. *Id.*

In this case, a reasonable jury could find that Brainlab's manual and its training and/or instructions on how to use FiberTracking do not satisfy the "conditioning" requirement from *Akamai*. This is because, as indicated, the plaintiffs have submitted no evidence that Brainlab's consultants and technicians trained or instructed any FiberTracking users on how to perform the steps of claim 36 and not just on how to use FiberTracking in a non-infringing way. Thus, unlike in *Eli Lilly*, there is no evidence that Brainlab "cross[ed] the line" from merely training or instructing FiberTracking users about the software to showing them how to use it in an infringing manner, let alone

requiring that they perform the steps of claim 36 when they used it. See *id.*

Another way that a party can condition participation in an activity or receipt of a benefit upon others' performance of at least one claim step is by making the "relevant 'activity' [] coextensive" with the claim step or steps. See *Travel Sentry*, 877 F.3d at 1382–83. In other words, the conditioning requirement can be satisfied where the party requires the other actor to complete at least one of the claim steps in order to participate in the relevant activity. See *id.* (vacating district court's entry of summary judgment on non-infringement and concluding that a reasonable jury could find that first requirement from *Akamai* was satisfied where the alleged infringing party conditioned another actor's participation in the relevant activity on the completion of the final two steps of the claim).

Based on the evidence before the Court on this motion, a reasonable jury could find that the use of Brainlab's FiberTracking software to create DTI images is not "coextensive" with claim 36. This is because the plaintiffs have not presented evidence showing that the use of FiberTracking is coextensive with at least one of the claimed steps. Stated differently, they have not presented evidence that the only way to use the FiberTracking to create DTI images is by performing at least one of the steps of claim 36.

For these reasons, the plaintiffs have not shown the absence of a disputed factual issue on *Akamai's* "conditioning" requirement.

ii. Manner or timing of performance

Under *Akamai*, as indicated, the second requirement for direction or control is that the allegedly infringing entity "establishes the manner or timing of [the] performance" of the claimed method. *Akamai Techs.*, 797 F.3d at 1023. One way an

entity can do so is by providing its customers with "detailed instructions" regarding how to participate in the relevant activity or access the relevant benefit by performing the claimed method, as well as "dedicated resources toward helping [its] customers resolve problems encountered along the way." *Travel Sentry*, 877 F.3d at 1383–84 (describing *Akamai Techs.*, 797 F.3d at 1025).

In *Akamai*, the Federal Circuit found that substantial evidence at trial showed that the alleged infringer "established the manner or timing of its customers' performance." *Akamai Techs.*, 797 F.3d at 1024. The court based this finding on the facts that the alleged infringer sent its customers "a welcome letter instructing" them on how to use the alleged infringer's service, including how to perform a process that included one of the claimed steps; provided step-by-step instructions that needed to be followed precisely in order to use the service; and "continuously engage[d] with customers' activities" by having engineers "assist with installation," "perform quality assurance testing," and "remain available if the customer[s] experience[d] any problems." *Id.* at 1025.

Similarly, a reasonable jury could conclude that Brainlab's manual and its training and/or instructional programs establish the manner by which FiberTracking users have performed the method in claim 36. The plaintiffs have put forth evidence from which a jury could infer that manuals explain step-by-step how to use the software and that consultants train users on how to follow those steps. The Court cannot, however, determine at this time whether a reasonable jury would be required to reach that conclusion because, as indicated, it cannot conclude that a jury would have to find that FiberTracking users actually perform the method in claim 36. Thus the Court cannot

determine at this time that there is no genuine factual dispute on the second requirement under *Akamai*.

B. Direct infringement of claims 37, 39, 46, and 47

Because the plaintiffs have not shown that they are entitled to summary judgement of direct infringement on claim 36, the Court need not separately address the additional limitations of claims 37, 39, 46, and 47, which are dependent on claim 36. See, e.g., *Duncan Parking Techs., Inc. v. IPS Grp., Inc.*, 914 F.3d 1347, 1360 (Fed. Cir. 2019) ("One who does not infringe an independent claim cannot infringe a claim dependent on . . . that claim.").

Conclusion

For the foregoing reasons, the Court denies plaintiffs' motion for summary judgment on the issue of direct infringement [dkt. nos. 342, 345 (as corrected)].



MATTHEW F. KENNELLY
United States District Judge

Date: September 22, 2020